Planning and Implementing Controlled Traffic Farming

Neale Postlethwaite, St Arnaud, Victoria

WHAT IS CONTROLLED TRAFFIC?

The driving of all vehicles along the same wheel tracks across the paddock throughout the year.

Why do we need to control our traffic?

- Reduce compaction
- Target our weed control more appropriately.
- Remove overlap/underlap to reduce costs.
- Convenience – all field tasks are more pleasant when the previous rows are there to follow as a guide.

BACKGROUND

Our 2000ha farm in the Wimmera has been operated as a "No Till" farm for the last 24 years. During that time many different challenges have been faced and addressed in various ways to allow us to crop continuously. With a 275mm average growing season rainfall (GSR) and having no livestock in the system we have been able to meet the challenge.

By maintaining our crop residues, reducing compaction and better soil structure we have been able to store an extra 50mm of sub soil water each season. This has meant that we have not needed fallow in the system to store water. Five years ago the move was made to go fully "controlled traffic". We had been halfway there for a number of years, having our boomspray a multiple of our seeder width.

HOW DO YOU MAKE CONTROLLED TRAFFIC WORK?

The most important thing is to reduce the impact of wheeled machinery over the paddock. Once soil structure has been improved by increasing the soil organic matter from retaining stubble then compaction can be addressed. In Queensland zero till didn't work initially because they had such poor structure, particularly in the summertime when rains meant bogged headers and the like. This lead to very poor soil, and it was only when the traffic was restricted on the paddocks that the soil structure started to improve.

In the Wimmera the self cracking clays tend not to be as poor, and as a result the damage caused by compaction can be partially repaired by the soil itself. However, we have found that once the soil structure improves, it is very obvious that we are suffering a yield penalty anywhere that wheel traffic is obvious across the paddock. One major factor of course is that livestock must be removed as a priority, as the compaction they cause is just as damaging.

The starting point is making the boomsprayer match the seeder. Ideally it would be three widths of the seeder, however with some thought it is possible to set a system up on two widths. All machines then need to have a similar wheel base. The coming standard will be three metres, as boomsprays, seeder tankers and headers are relatively easy to set up this way.

The next step is to tramline sow the crop with a different row, or pair of rows to make it easy for following through the season. With an obvious mark to follow, the operating window for spraying opens up to nighttime, this improves the efficiency of operation. Overlap is eliminated, or at least

becomes consistent, allowing better budgeting of sprays. (It can be annoying running out of spray with 200m left to go in the paddock!)

THE MECHANICS OF OUR SYSTEM

All our machinery is based on 3m wheel base. We have an 11m seeder, 33m boomsprayer and 11m centre discharge header front. Our chaser bin also has 3m wheelbase, and a loading hopper extension to keep it on our tracks. We use AgGuide GPS autosteer to establish our tramlines, keeping all the traffic to an 18.4" wide wheeltrack each side of each machine. We don't sow the wheel tracks; this reduces the risk of infection and spread of disease through the crop from plant injury as machinery drives over the paddock.

SOME BENEFITS OF CONTROLLED TRAFFIC

The full benefits of controlled traffic are possible when it is part of a system. Using it in conjunction with zero till allows many new options for weed control, and disease control to be possible. We use 2cm GPS to set up the tramlines, to target areas of the paddock for special treatment. For example we can side dress fertilizer beside the crop row, so that only the crop has access to it, and not the weeds. This also means we don't have to wait for a rain to allow the nitrogen to wash in, as is the case with topdressing.

The most exciting development that controlled traffic allows is the more targeted use of herbicides and fungicides. We have halved our fungicide and insecticide costs because of controlled traffic. Wide row spacing, while controversial, is still a major part of the system. Utilising the stubble blanket as a means of reducing evaporation allows the flexibility of widening the row width without reducing crop yield in some crops. This then can allow the strategic use of shielded sprayers to target weeds and reduce herbicide costs by approximately one third. To explain how this is possible is more than space will allow, however timing of spraying is critical for a good result. There are also more opportunities to rotate chemical groups this way as well.

Figure 1: Three point linkage TPOS shielded sprayer (11m wide) in a crop of barley.

PERCEIVED PROBLEMS

To many people the cost of getting into a new system is going to be limiting, however with controlled traffic it need not be the case. Some lateral thought is required first. You need to get around your machinery and think about how it may be used, as it is, then prioritize what can be modified over time. Work out what can't be changed and make the rest of your equipment fit around that. The main thing is to standardise on machinery width. A smaller boomspray isn't necessarily a problem when you can drive it for more hours in the day.

With any new technology there is always a steep learning curve to climb, so speak to as many people as possible to find out how others do it so that you can avoid "re-inventing the wheel."

TAKE HOME MESSAGE

If you are looking at reducing your costs, and improving the health and structure of your soil, then consideration must be given to zero tillage and controlled traffic. With our grain legume crops in particular being more expensive to grow we need to target the pests and diseases more carefully in order to make money and be environmentally sustainable in the longer term.